

ART. XXXIX.—*Further contributions to the Lichen Flora of New Zealand.**

By CHARLES KNIGHT, F.R.C.S., F.L.S.

[Read before the Wellington Philosophical Society, 29th January, 1876.]

Plate XI.

Urceolaria Novæ-zealandiæ, Knight.

Thallus cinerascens indeterminatus leproso-areolatus v. quasi detritus. Apothecia parva immersa, disco subdepresso fusco farinaceo (margine thallode nullo) nucleo, a excipulo dimidato-fusco cincto, paraphysibus distinctis rectis tenuis. Sporæ in ascis cylindraceis fuscæ ovatae murali-divisæ horizontaliter 5-6-septatae, longit. ·027 mm., crassit. ·018 mm.

Ad saxa.

Thallus ashy-grey, indeterminate, leproso-areolate, or as if worn out. Apothecia small, immersed, disc somewhat sunk in, brown, mealy (no thallodal margin), nucleus bound by a dimidiate brown excipulum; paraphyses distinct, straight, fine. Spores in cylindrical ascii, brown, ovate, murali-divided, horizontally 5-6-septate.

On rocks.

- Fig. 1. Section of apothecium magnified 14 diameters.
 1. *a*, Ascus and spores, markings omitted, 300 diameters.
 1. *b*, Spores, shewing cellular structure, 300 "

Pertusaria graphica, Knight.

Thallus late effusus cartilagineus albicans v. cinereo-albicans rimuloso-areolatus, verrucis subgloboso-difformibus crebris v. confertissimis (deinde deplanatis) obsitus, e gonidia per totam partem instructus. Apothecia plura in singulis verrucis thalli inclusa (excipulo proprio prorsus nullo) primitus a thallo tecta, tandem aperta, discis irregularibus sœpe in pseudo-discum confluentibus, epithecio fusco, paraphysibus tenerrimis tortilis. Sporæ 4-næ simplices ellipsoideæ grumo-granulosæ dilute luteæ, episporio crasso, longit. ·082 mm., crassit. ·04 mm.

Ad saxa.

* In continuation of Art. LIII., Vol. VII. Trans. N.Z. Inst., page 356.

Thallus widely spread, cartilagineous, whitish or greyish-white, rimuloso-areolate, with numerous or very crowded (then flattened) subglobose deformed verrucæ, furnished with gonidia in every part. Apothecia several included in each verruca (proper excipulum none), at first covered by the thallus, at length open, the irregular discs often flowing into a pseudo-disc; epithecium brown, paraphyses very slender, twisted. Spores four in each ascus, simple, ellipsoid, grumose-granulose, pale yellow; episporule thick, length .082 mm., breadth .04 mm.

On rocks.

Fig. 2. Discs of apothecia on verruca magnified 14 diameters.

2. a, Section of verruca magnified 14 diameters.

2. b, Four spores, with paraphyses, magnified 300 diameters.

Lecidea littoralis, Knight.

Thallus cinereo-albidus v. cinerascens crassus continuus v. areolatus late expansus laevis. Apothecia adnata majuscula (latit. 2·65 mm.) sparsa atra pruinosa tenuiter marginata deinde tumidula et difformia, margine atro flexuoso v. lobato v. lobato inciso. Sporæ simplices ellipsoideæ, longit. ·013 ad ·018 mm., crassit. ·006 mm. Hypothecium fuscum v. linea atra hypothecii latera et basim circumscribens.

Ad saxa.

Thallus ashy-white or grey, thick, continued or areolate, widely spread out, smooth. Apothecia adnate, rather large (2·65 mm. across), scattered, black, pruinose; margin thin, black, at length raised, deformed, flexuose or lobed or labato-incised. Spores simple, colourless, ellipsoid, length ·013 ad ·018 mm., breadth ·006 mm. Hypothecium brown, or circumscribed at the sides and base by a black line.

On rocks.

Closely allied to *Lecidea albo-cærulescens*, Wulff, and *L. contigua*, Hoffm.

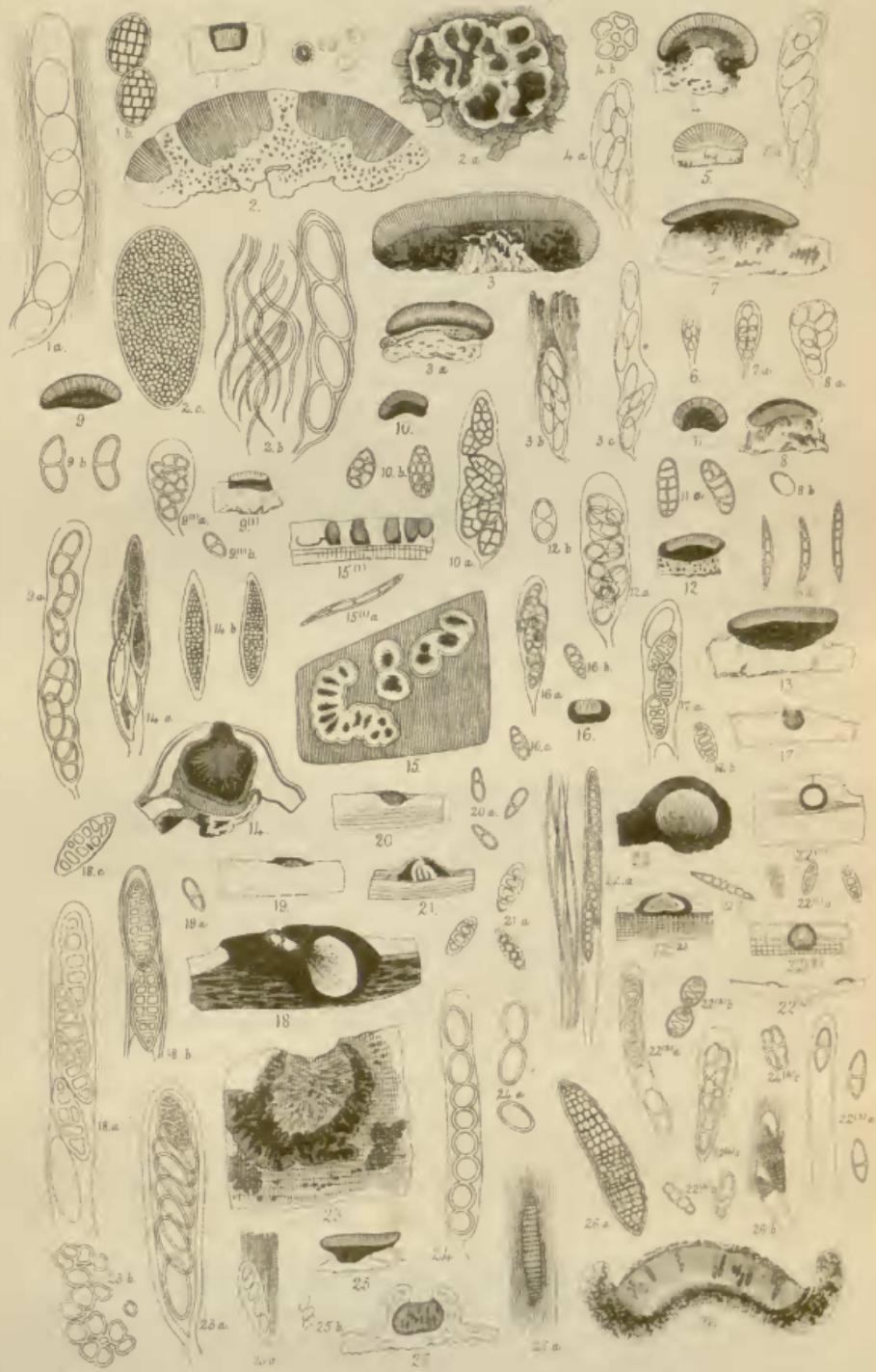
Fig. 3 and 3 a, Apothecia magnified 14 diameters.

3 b and 3 c, Ascus, spores, and paraphyses, magnified 300 diameters.

Lecidea subglobulata, Knight.

Thallus cinerascens minute furfuraceo-diffractus v. squamuloso-areolatus, granulis goniatis viridibus. Apothecia immarginata interdum confluentia, disco atro convexo tandem hæmispherico v. subglobuloso. Sporæ in ascis ventricosiusculis simplices ellipsoideæ subhyalinæ tandem dilute luteæ, longit. ·013 ad ·022 mm., crassit. ·007 mm. Hypothecium atrum v. fuscum.

Ad saxa.



Thallus greyish, minutely furfuraceus, cracked or squamuloso-areolate, granula gomimia green. Apothecia immarginate, sometimes confluent, disc black convex, at length hemispherical or subglobose. Spores in subventricose asci, simple, ellipsoid, somewhat hyaline, at length yellowish. length .018 ad .022 mm., breadth .007 mm. Hypothecium black or brown,

On rocks.

Fig. 4. Section of apothecium (subhymeneal stratum), much too dark, magnified 14 diameters.

4. a, Ascus and spores magnified 300 diameters.

4. b, Gomimia magnified 300 diameters.

Lecidea subargillacea, Knight.

Thallus luteo-albus continuus. Apothecia subaggregata innata v. adnata concava fusca immarginata interdum difformia saepe furfuracea. Sporae in ascis cylindraceis grumoso-luteæ v. hyalinæ, longit. .016 mm., crassit. .008 mm. Hypothecium album.

Ad terram argillaceam.

Thallus yellowish-white, continued. Apothecia somewhat crowded, innate or adnate, concave, brown, immarginate, often furfuraceous. Spores in cylindrical ascus, grumose, yellowish or hyaline, length .016 mm., breadth .008 mm. Hypothecium white.

On clay soil.

Syn. *Lecidea meiospora*, Nyl. (?) printed by mistake *Lecanora meiospora*, Nyl. ("Trans. N. Z. Inst.", Vol. VII.) Page 359, No. X.

Fig. 5. Section of apothecium magnified 14 diameters.

5. a, Ascus and spores " 300 "

Lecidea atro-morio, Knight.

Thallus nigro-cinerascens tenuis squamulosus, squamulis minutis rotundis planis rufescentibus nitidis ad ambitu plerumque minute furfuraceis. Apothecia atra parva plana ex hypothallo nigricante inter squamulas denudato oriunda, squamulas haud superantia, interdum margine thallino spurio e granulis minutissimis cincta. Sporae minutæ ovoideæ v. globulæ, longit. .0065 mm., crassit. .005 mm. Gonidia magna. Hypothecium fuscum.

Ad saxa.

Thallus dark grey, thin, scaly; scales minute, round, flat, reddish, shining, margin minutely furfuraceous. Apothecia black, small, flat, arising between the scales from the exposed hypothallus, not raised above

the thallus, sometimes bound by a spurious thalline minutely granular margin. Spores minute, ovoid or globular, length .0065 mm., breadth .005 mm. Gonidia large. Hypothecium brown.

On rocks.

Fig. 6. Ascus and spores magnified 300 diameters.

Lecidea sublapicida, Knight.

Thallus granulosus indeterminatus cinereo-albus. Apothecia in thalli lacunis sæpissimè confluentia adpressa aterrima nuda planiuscula v. concaviuscula, margine tenuissimo atro undulato, paraphysibus tenuis conglutinatis. Sporæ in ascis ventricoso-clavatis parvulae ovoideæ simplices hyalinæ, longit. .005 mm., crassit. .004 mm. Stratum hypothecii subhymeniale atrum.

Ad saxa.

Thallus granular, indeterminate, greyish-white. Apothecia most frequently confluent in lacuna of the thallus, adpressed, very black, naked, flat, or a little concave; margin very thin, black, undulate; paraphyses slender, conglutinate. Spores in ventricose clavate ascii, small, ovoid, simple, hyaline; length .005 mm., breadth .004 mm. Hymenial stratum of hypothecium black.

On rocks.

Fig. 7. Section of apothecium magnified 14 diameters.

7. a, Ascus and spores " 300 "

Differs from *L. lapicida* in its smaller ovoid spores, much finer paraphyses, and black hypothecium. In *L. lapicida* the subhymenial stratum is slightly colored, and the inferior stratum forms a thin black line continued from the margin.

Lecidea subcoarctata, Knight.

Thallus cinereo-albus areolatus v. areolato-granulosus v. continuus. Apothecia conferta fusca v. atro-fusca adnata sat parva convexa, margine integerrimo pallido v. dilute fusco nudo demum evanido. Sporæ in ascis ventricoso-clavatis simplices ovoideæ incolores, longit. .011 mm., crassit. .007 mm. Hypothecium album.

Ad saxa.

Thallus greyish-white areolate or areolato-granulose or continuous. Apothecia crowded, brown or dark brown adnate, rather small, convex, margin quite entire, pallid or pale brown, naked, at length vanishing.

Spores in ventricose club-shaped asci, ovoid, colourless, length .011 mm., breadth .007 mm. Hypothecium white.

On rocks.

Fig. 8. Section of apothecium magnified 14 diameters.

8. *a*, Ascus and spores ,, 300 ,,

Differs from *L. coarctata* in the much smaller ovoid spores, the ventricose ascus and white hypothecium.

Lecidea subbadio-atra, Knight.

Thallus fusco-cinereus rimulosus æqualis. Apothecia nigro-fusca parva convexa marginata, margine dilute concolor in statu juvenili prominenti demum obscurato. Sporæ fuscæ oblongæ curvatulæ 1-septatæ, longit. .025 mm., crassit. .01 mm. Lamina proligera hypothecio nigro duplici (strato intermedio fusco) enata.

Ad saxa.

Thallus brownish-grey, cracked, equal. Apothecia blackish-brown, convex, margined, margin faintly coloured, in the young state prominent, at length obscure. Spores brown, oblong, somewhat curved, 1-septate, length .025 mm., breadth .01 mm. The lamina proligera sprung from a black double hypothecium, the intermediate stratum brown.

On rocks.

Fig. 9. Section of apothecium magnified 14 diameters.

9. *a* and *b*, Ascus and spores ,, 300 ,,

Lecidea whakatipæ, Knight.

Thallus albus parum visibilis v. obsolete indicatus. Apothecia parva atra juniora plana et tenuiter marginata deinde convexa v. suborbiculata immarginata. Sporæ fuscæ ellipticæ 1-septatæ, longit. .013 mm., crassit. .006 mm. Hypothecium atrum.

Ad saxa.

Thallus white or obsolete or scarcely visible. Apothecia small, black, the younger flat and slightly marginated, then convex or suborbiculate, immarginate. Spores brown elliptic 1-septate, length .013 mm., breadth .006 mm. Hypothecium black.

On rocks.

Fig. 9. (1), Section of apothecium magnified 14 diameters.

9. (1), *a* and *b*, Ascus and spores ,, 300 ,,

Lecidea stellulata, Tayl. (descrip. amend.)

Thallus albus v. cinereus tenuissimus minutissime areolatus v. granulosus hypothallo atro limitatus, saepius in agellos a hypothallo denudato metatus. Apothecia parva subinnata confluentia atra plana tenuiter marginata, margine saepe e granulis effuso. Sporae in ascis ventricoso-clavatis, ovatae fuscae 1-septatae, longit. ·012 mm., crassit. ·006 mm. Hypothecium atro-fuscum.

Ad saxa.

Thallus white or greyish, very thin, minutely areolate or granular, bound by a black hypothallus, often marked off into small areas by the exposed hypothallus. Apothecia small, subinnate, confluent, black, flat, margin thin, often sprinkled with granules. Spores in ventricose club shaped ascus, ovate, brown, 1-septate, length ·012 mm., breadth ·006 mm. Hypothecium dark brown.

On rocks.

Lecidea petræa, Flot., v. *Neo-zealandica*, Knight.

Thallus cinereo-plumbeus minute granulosus, hypothallo nigricante inter granula denudato enatus. Apothecia sat parva plana crebra, disco aterrimo nudo elevato-marginato, margine primum e granulis minutis suffusis—tandem fusco-atro. Sporae in ascis ventricosis 3–5-septatae, et septa transversa septulis longitudinalibus v. obliquis juncta, subhyalinae tandem dilute fuscae, longit. ·023 mm., crassit. ·009 mm. Hypothecium fusco-nigrum.

Ad muros.

Thallus greyish-lead colour, minutely granulose sprung from a black hypothallus denuded between the granules. Apothecia somewhat small, flat, numerous, disk very black, naked, margin raised, at first suffused with minute granules, at length brownish-black. Spores in a ventricose ascus, 3–5 septate, the septa joined longitudinally or obliquely by short septa, length ·023 mm., breadth ·009 mm. Hypothecium brownish-black.

On walls.

Fig. 10. Section of apothecium magnified 14 diameters.

10. a and b, Ascus and spores , , 300 , ,

Lecidea petræa, Flot., v. *violacea*.

Thallus minute tuberculosus, tubercula violacea, hypothallo nigricante. Apothecia parva creberrima nigra innata v. adnata concaviuscula immarginata. Sporae fuscae 5-septatae, septa transversa septulis longitudinalibus v.

obliquis juncta, longit. ·027 mm., crassit. ·01 mm. Hypothecium atrum.

Ad saxa.

Thallus minutely tubercular, the tubercles violet; hypothallus blackish. Apothecia small, very numerous, black, innate or adnate, somewhat concave, immarginate. Spores brown, 5-septate, the transverse septa joined longitudinally or obliquely by short septa, length ·027 mm., breadth ·01 mm.

On rocks.

Fig. 11. Section of apothecium magnified 14 diameters.

11. *a*, Two spores „ 300 „

Lecidea tubulata, Knight.

Thallus granuloso-diffractus albo-cinerascens indeterminatus. Apothecia nigra marginata, disco plano pruinosa, margine atro elevata. Sporae in ascis clavatis fuscae biloculares, loculis tubulo brevi junctis, longit. ·018 mm., crassit. ·011 mm. Hypothecium atrum. Hypothallus albus.

Ad saxa.

Thallus granulose, cracked, whitish-grey, indeterminate. Apothecia in black, marginated; disc flat, pruinose, margin black, elevated. Spores in club-shaped ascii, brown, bilocular, the cells joined by a short tube, length ·018 mm., breadth ·011 mm. Hypothecium black. Hypothallus white.

On rocks.

Fig. 12. Section of apothecium magnified 14 diameters.

12. *a* and *b*, Ascus and spores „ 300 „

Lecidea subfarinosa, Knight.

Thallus albus effusus rugulosus. Apothecia (latit. ·8 mm. v. minora) albo-pruinosa rotundato-difformia elevato-sessilia tenuiter marginata, margine saepe flexuoso, paraphysibus superne fuscecentibus concretis, disco concavo v. plano v. convexo. Sporae 4-6-septatae aciculati-fusiformes incolores v. tandem dilute lutescentes, longit. ·034 mm., crassit. ·005 mm.

Ad cortices arborum.

Thallus white, effuse, rugulose. Apothecia (·8 mm. or less in diam.) white-pruinose, rotundato-difformed, elevato-sessile; margin thin, often flexuose; paraphyses brown above, concrete; disc concave, flat, or convex. Spores 4-6-septatae, aciculati-fusiform, colourless or dilute yellow, length ·034 mm., breadth ·005 mm.

On bark of trees.

L. farinosa, Ach., *L. Dilleniana*, Ach., *L. abietina*, Ach., *L. premnea*, Ach., and the above Lichen are very closely allied. The New Zealand Lichen approaches closely *L. abietina*, Ach., from which it differs principally in the greater number of septæ in the spores and the smaller apothecia.

Fig. 13. Section of apothecium magnified 14 diameters.

13. *a*, Three spores „ 300 „

Lecidea schistacea, Knight.

Thallus *schistaceus determinatus tenuis squamulosus*, squamulis rotundis adpressis minutissimis pruinis, hypothallo nigro. Apothecia nigra mediocria v. parva squamulas superantia marginata, disco plano, margine prominenti interdum undulato. Sporæ minute ellipsoideæ incolores, longit. ·008 mm., crassit. ·004 mm. Hypothecium nigrum.

Ad saxa.

Thallus slate-grey, determinate, thin, scaly; scales round, adpressed, very minute, pruinose; hypothallus black. Apothecia black, mediocre or small, elevated above the scales, margined, disc flat, margin prominent, sometimes undulate. Spores minute, colourless, ellipsoid, length ·008 mm., breadth, ·004 mm. Hypothecium black.

On rocks.

Fig. 25. Section of apothecium, magnified 14 diameters.

25. *a* and *b*, Ascus and spores „ 300 „

Lecanora parella v. *implicata*, Stirton.

Dr. Stirton, in his additions to the Lichen Flora of New Zealand, published in the "Journal of the Linnean Society," has transferred *Lecanora implicata* to the genus *Lecidea*. The Lichen, however, is a true *Lecanora*, and a variety only of *Lecanora parella*, as I pointed out in a paper published in the "Trans. N. Z. Inst.," Vol. VII., p. 357.

Porina endochrysa, Mont.

Thallus late effusus tenuis fragilis colliculosus glauco-cinereus subitus bullatus. Apothecia immersa, perithecio flavescente integro normaliter globoso, ostiolo fuscō depresso primum occluso demum aperto, nucleo, fusco, paraphysibus filiformibus. Sporæ 8-næ incolores cymbiformes murali-divisæ, longit. ·09 ad ·15 mm., crassit. ·025 ad ·04 mm., episporio crasso.

Ad cortices arborum.

Thallus widely spread, thin, brittle, raised in mounds, glaucous-grey, beneath bullate. Apothecia immersed, peritheciun yellowish, entire, nor-

mally globose; ostiole brown, depressed, at first closed, then open; nucleus brown; paraphyses filiform. Spores 8, colourless, boat-shaped, murali-divided, length .09 ad. .15 mm., breadth .025 ad. .04 mm., episore thick.

On bark of trees.

Syn. Thelenella Wellingtonii, Stirton ("Jour. Linn. Soc.", Vol. XIV., p. 473.)

Fig. 14. Section of apothecium (too dark, nucleus diaphonores, but becoming light brown from age.)

14. *a* and *b*, Ascus and spores magnified 300 diameters.

Chiodection (Platygrapha) inconspicua, Knight and Mitten.

Thallus crustaceus cinereo-violaceus verrucæformis, verrucis dilute concoloribus. Apothecia minuta normaliter globosa, in verrucis thallinis rotundatis v. flexuoso-elongatis supra planiusculis immersa—(passim confluentia)—plura in quavis verruca unumquidque atro-fusco toro oriens, disco rotundo v. oblongo v. attenuato-oblongo nigro. Sporae oblongo-fusiformes curvatulæ 3-septatae incolores, longit. .05 mm., crassit. .004 mm.

Ad cortices arborum.

Syn. Chiodection conchyliatum, Stirton, *C. moniliatum*, Stirt., et *C. sinuosum*, Stirt.

Thallus crustaceous, ashy-violet, verrucoid; verrucae lighter colour. Apothecia minute, normally globose, immersed in roundish or flexuose elongated thalline verrucae—(here and there confluent)—several in each verruca, each arising from a blackish-brown torus, disc black, round or oblong or tapering. Spores oblongo-fusiform somewhat curved, 3-septate, colourless, length .05 mm., breadth .004 mm.

On bark of trees.

The genera *Platygrapha* and *Chiodection* are very closely allied. The apothecia arise from a brown torus, and are surrounded by a spurious thallodal margin, which, in *Chiodection*, assumes a verrucoid appearance from the confluence of a number of apothecia.

Fig. 15. (1), Section of apothecium magnified 14 diameters.

15. (1) *a*, Spore " 300 "

Opegrapha saxicola, Ach.

Thallus oblitteratus. Apothecia atra lirellæformia saepe flexuosa rarius rotundo-diformia, epithecio pliciformi v. rimiformi, marginibus parallelis v.

medis paullulim distentis. Sporae linear-i-oblongae v. linear-i-clavatae 3-septatae dilute luteae, longit. ·017 mm., crassit. ·006 mm.

Ad saxa

Thallus obliterated, lirellaeform, often flexuose (rarely round, deformed), margins parallel or a little distended in the middle; epithecium pliciform or rimiform. Spores linear-oblong or linear-clavate, 3-septate, light yellow, length ·017 mm., breadth ·006 mm.

On rocks.

Fig. 16. Section of apothecium magnified 14 diameters.

16. a, Ascus and spores	,	300	"
16. b, c, Spores	,	300	"

Fissurina novæ-zealandiæ, Knight.

Thallus crustaceus laevigatus ochraceus tenuiter areolatus. Apothecia immersa flexuosa linear-i-elongata, fissuris a thallo marginatis conniventibus tumulis, excipulo atro-fusco crasso a thallo insuper tecto infra subito evanescente. Sporae in ascis clavatis 5-septatae ellipsoideæ incolores, longit. ·02 mm., crassit. ·01 mm.

Ad saxa.

Thallus crustaceous, smooth, ochraceus, finely areolate. Apothecia immersed, flexuose, linear-elongate; fissures margined by the thallus, connivent, swollen; excipule blackish-brown, above thick, covered by the thallus, below suddenly evanescent. Spores in a club-shaped ascus, ellipsoid, colourless, 5-septate, length ·02 mm., breadth ·01 mm.

On rocks.

Fig. 17. Section of apothecium magnified 14 diameters.

17. a and b, Ascus and spores	,	300	"
-------------------------------	---	-----	---

Astrothelium pyrenastroides, Knight.

Thallus effusus glauco-albescens v. cinereo-olivaceus v. ochraceus rimulosus. Apothecia convexa a thallo plus minus velata demum denudata carbonacea, loculis 2-5, ostiolis convergentibus in os commune sæpissime desinentibus, ore ochraceo, paraphysibus tenerrimis rectis v. subtortilis. Sporæ in ascis elongato-cylindraceis incolores demum dilute fuscae fusi-formes 5-8-septatae—(vix unquam 3-4-septatae)—v. sæpius murali-divisæ v. interdum locellis medianis a septulis longitudinalibus divisæ, longit. ·038 mm., crassit. ·012 mm.

Ad cortices arborum.

Syn. Trypethelium pyrenuloides, Mont. (?)

“ *Cumingii*, Fee. (?)

“ *astroidea*, Fee. (?) “ Haud non differt a *T. pyrenuloides*.” (Mont.)

Verrucaria pyrenastroides, Kn. (“ Trans. Linn. Soc.,” Vol. XXIII., Tab. 11, p. 100.)

Astrothelium prostratum, Stirt. (“ Journ. Linn. Soc.,” Vol. XIV., p. 478.)

Astrothelium ochrocleistum, Nyl., in litt.

Thallus effuse, glaucous, white, or greyish-olive, or ochraceus, rimulose. Apothecia convex, more or less veiled by thallus, at length uncovered, carbonaceous, cells 2–5, ostioles most frequently converging into a common opening; paraphyses very slender, straight or somewhat twisted. Spores in elongated ascus, colourless, at length pale brown, fusiform, 5–8-septate—(rarely 3–4-septate)—more frequently murali-divided, or sometimes median cells divided by short longitudinal septæ, length .038 mm., breadth .012 mm.

On bark of trees.

Fig. 18. Section of apothecium, showing the ostioles of adjoining apothecia opening into common canal, magnified 14 diameters.

18. *a*, *b*, and *c*, Ascus and spores, magnified 300 diameters.

Verrucaria gemellipara, Knight.

Thallus cerino-umbrinus tenuissimus glaber linea nigra limitatus. Apothecia parva parum prominula, ambitu appanato, dimidiati nigra, basi amplificata, poro pertuso instructa, paraphysibus distinctis. Sporæ uniseptatae in medio subconstrictæ incolores, longit. .017 mm., crassit. .006 mm.

Ad cortices arborum.

Syn. V. circumpressa, Nyl., in litt.

V. epidermidis v. *gemellipara*, Knight.

Thallus yellowish-brown, very thin, smooth, limited by a dark line. Apothecia small, slightly prominent, flattened round the border, dimidiata, black, base enlarged, opening by a pore, paraphyses distinct. Sporæ uniseptatae, somewhat constricted in the middle, colourless, length .017 mm., crassit. .006 mm.

On bark of trees.

Fig. 19. Section of apothecium magnified 14 diameters.

19. *a*, Spores “ 300

Verrucaria minutissima, Knight.

Thallus atro-cinerascens tenuissimus. Apothecia contigua minutissima prominula dimidiatim nigra, poro pertuso instructa, paraphysisbus distinctis. Sporæ dilute fuscæ, uniseptatae (an interdum 3-septatae?) in medio sub-constrictæ, cellula superiore majore, longit. ·018 mm., crassit. ·005 mm.

Ad cortices arborum.

Thallus dark grey, very thin. Apothecia contiguous, very minute, somewhat prominent, dimidiate, black, with an open pore, paraphyses distinct. Spores light brown, 1-septate, (sometimes 3-septate?) constricted in the middle, the upper cell larger, length ·018 mm., breadth ·005 mm.

On bark of trees.

The spores have much the appearance of a sphæria. Except the bright colour, not unlike those of *Verrucaria conferta*, Tayl. (Leight. Angios. Lich.)

Fig. 20. Section of apothecium magnified 14 diameters.

20. a, Spores „ 300 „

Verrucaria dealbata, Knight.

Thallus albescens tenuis effusus glaber. Apothecia nigra haemispherico-conoidea parva dimidiata, paraphysisbus distinctis. Sporæ in ascis cylindraceis dilute fuscæ ellipsoideæ 3-5-septatae, longit. ·023 mm., crassit. ·008 mm.

Ad cortices arborum.

Thallus whitish, thin, effuse, smooth. Apothecia black, haemispherico-conoid, small, dimidiate; paraphysis distinct. Spores in cylindrical ascus, faint brown, ellipsoid, 3-5-septate, length ·023 mm., breadth ·008 mm.

On bark of trees.

Fig. 21. Section of apothecium magnified 14 diameters.

21. a, Spores „ 300 „

Verrucaria saxicola, Knight.

Thallus luteo-olivaceus tenuissimus v. nullus. Apothecia parvula haemispherica, perithecio carbonaceo integro, ostiolo inconspicuo, nucleo subgloboso hyalino, paraphysisbus capillaribus farcto. Sporæ in ascis elongato-cylindraceis incolores fusiformes, 7-8-septatae, longit. ·032 mm., crassit. ·005 mm.

Ad saxa.

Thallus yellowish-olive, very thin or none. Apothecia rather small,

haemispherical; perithecium carbonaceous, entire; ostiole inconspicuous; nucleus subglobose, hyaline, filled with capillary paraphyses. Spores in elongate cylindrical ascus, colourless, fusiform, 7–8-septate, length .032 mm., breadth .005 mm.

On rocks.

Fig. 22. Section of apothecium magnified 38 diameters.

22. *a* and *b*, Ascus, spores, and paraphyses magnified 300 diameters.

Verrucaria micromma, Mont.

Thallus ochraceo-albus granuloso-colliculosus irregulariter plicato-rugulosus plus minus rimosus effusus. Apothecia nigra integra globosa in verrucis thalli confluentibus penitus abdita, canaliculis ad sporas mittendas in verrueas thalli productis, ostiolis nigris minutissimis instructa, paraphysibus distinctis capillaribus. Sporae in ascis elongato-cylindraceis ellipsoideae 3-septatae dilute fuscae, longit. .016 mm., crassit. .006 mm.

Ad cortices arborum.

Thallus yellowish-white, granuloso-colliculose, irregularly plicato-rugulose, more or less rimose, effuse. Apothecia black, entire, globose, completely hidden in the confluent thalline verrucae, the channels for emission of spores extending through the thalline verrucae, apertures very minute, black, paraphyses distinct, capillary. Spores in elongated cylindrical asci, ellipsoid, 3-septate, dilute brown, length .016 mm., crassit. .006 mm.

On bark of trees.

Fig. 22. (1), Section of apothecium magnified 14 diameters.

22. (1), *a*, Spores „ 300 „

Verrucaria astata, Knight.

Thallus tenuis fulvo-fuscus v. cinereo-fuscus opacus continuus indeterminatus.

Apothecia nigra prominula—madefacta sœpe innata—haemispherica, integra, paraphysibus capillaribus tenerimis distinctis. Sporæ in ascis elongato-cylindraceis ovoidæ fuscae 3-septatæ, longit. .014 mm.; crassit. .009 mm.

Ad cortices arborum.

Thallus thin, yellowish-brown or greyish-brown, dull, continuous indeterminate. Apothecia black, somewhat prominent, often innate when moistened—hemispherical, entire, paraphyses capillary, very slender, dis-

tinct. Spores in elongated cylindrical asci, ovoid, brown, 3-septate; length, ·014 mm.; breadth, ·009 mm.

On bark of trees.

Dr. Nylander (in litt.) has determined this lichen as *V. aspita*, Ach. There is some confusion about Acharuis's plant. Nylander has remarked, "Esse videtur modo *V. nitida* minor, sporis minoribus." Montaigne describes *V. aspita*, Ach., with "sporis magnis ellipticis 16-annulatus, annulis pauci-cellulosus." He adds that *V. aspita*, of Eschw. is incorrectly named. He has, therefore, named Eschweilei's plant *V. eschweileri*, with "spora binucleolata." Acharius describes his plant as having polished yellowish thallus, limited by a black line. In these and other characters it differs from the New Zealand lichen.

Fig. 22. (2), Section of apothecium magnified 14 diameters.

22. (2), *a* and *b*, Ascus and spores , , 300 , ,

Verrucaria sub-biformis, Knight.

Thallus albus effusus inæqualis rimosus. Apothecia subminuta prominentia (madefacta innata) nigra subglobosa integra, paraphysibus capillaribus confertis. Sporæ in ascis cylindraceis oblongæ, 1-septatae incolores, longit. ·02 mm.; crassit. ·007 mm.

Ad cortices arborum.

Thallus white, effuse, unequal, rimose. Apothecia subminute, prominent (innate when moistened) black, subglobose, entire; paraphyses capillary, closely-packed. Spores in cylindrical asci, oblong, 1-septate, colourless; length, ·02 mm.; breadth, ·007 mm.

On bark of trees.

Fig. 22. (3), Section of apothecium magnified 14 diameters.

22. (3), *a*, Ascus and spores , , 300 , ,

Verrucaria pruino-gricea, Knight.

Thallus effusus tenuis plus minus pseudo-farinaceus griceus. Apothecia minutissima dimidiata patentia. Sporæ in ascis clavatis incoloratae tandem fuscae lineari-oblongæ, 1-septatae v. sèpissime interrupte-quadrinucleolatae, longit. ·02 mm. crassit. ·006 mm.

Ad cortices arborum.

Thallus effuse, thin, more or less pseudo-farinaceous, grey. Apothecia very minute, dimidiata, spreading. Spores in club-shaped asci, colourless,

at length brown, linear oblong, 1-septate, very often interruptedly quadri-nucleolate; length, .02 mm.; breadth, .006 mm.

Fig. 22. (4), Section of apothecium magnified 14 diameters.

22. (4), *a, b, c*, Ascus and spores „ 300 „

Thelotrema saxatilis, Knight.

Thallus albidus v. cinereo-albidus continuus granulosus indeterminatus, tenuis. Apothecia normaliter globosa in verrucis thallinis rotundatis supra planis immersa, aperturis rotundatis depresso excipulo proprio instructa, paraphysibus capillaribus. Ascus monosporus. Sporae dilute fuscae tandem fusco-nigricantes fusiformes murali-divisae longit. .16 mm.; crassit. .038 mm.

Ad saxa.

Thallus whitish, or grey-white, continuous, granulose, indeterminate, thin. Apothecia normally globose, immersed in thalline verrucae, round, flat above; opening round, depressed; furnished with a proper excipulum; paraphyses capillary. Ascus with one spore. Spores dilute brown, at length brownish-black, fusiform, murali-divided, length, .16 mm.; breadth, .038 mm.

On rocks.

Fig. 27. Section of apothecium magnified 14 diameters.

27. *a*, Spores and paraphyses „ 300 „

Thelotrema monosporum, Nyl. v. *patulum*, Knight.

Thallus luteo-albus diffractus crassus. Apothecia verrucaeformia ex-cipulo duplice instructa, interiore membranaceo tandem lacero-dehiscente, nucleo madefacto expanso-discoideo, ascus monosporus interdum disporus (ex ea re sporae minores). Sporae fuscae fusiformes murali-divisae, longit. .05 ad .10 mm.; crassit. .015 ad .03 mm.

Ad cortices arborum.

Syn. Thelotrema monosporum v. *patulum*, Nyl. in litt.

Thallus cream colour, broken, thick. Apothecia verrucaeform, with a double excipulum—the interior membranaceous, at length torn, gaping—nucleus moistened expands with a broader disc. Ascus one-spored, sometimes two-spored (then spores smaller). Spores brown fusiform, murali-divided, length, .05 ad .1 mm.; breadth, .015 ad .03 mm.

On bark of trees.

Fig. 26. Section of apothecium magnified 26 diameters.

26. *a* and *b*, Spores „ 240 „